A supply air device with a filter bag including an interconnection between the filter bag an a branch connected to the supply air conduit.

The invention relates to a supply air terminal device for a ventilation duct network of the kind that is seen in the preamble of claim 1.

Thus, the invention relates to a supply air terminal device for a ventilation duct network, comprising a flexible bag of filter material, which with the neck thereof is releasably mounted on a pipe socket, which forms an end portion of a supply air pipe, which belongs to the ventilation duct network, and which mouths into the room.

The bags in question have to be exchanged after a certain operating period, since they eventually are clogged by sludge and other dust that are conveyed by the supply air up to the supply air terminal device.

In known supply air terminal devices of the kind in question, the flexible bag is mounted on the pipe socket by the bag neck thereof being threaded on the pipe socket, the outer diameter of which preferably closely corresponds to the inner diameter of the bag neck, after which the bag neck has to be fastened on the pipe socket, for instance by the fact that a hose clamp or the like is applied round the bag neck in order to closely clamp the same on the pipe socket. Such a bag mounting is usually carried out during operation of the ventilation duct network when a considerable force acts against the bag; the bag is manufactured in order to produce a pressure drop of the order of 100 Pa and the diameter of the bag neck may, for instance, be 20–30 cm or more. When the operator finally has succeeded in threading the bag neck on the pipe socket, he/she should retain the bag on the pipe socket in spite of the force that the supply air exerts against the bag, and simultaneously apply a hose clamp or the like for the lashing of the bag. Therefore, the bag exchange is relatively cumbersome and requires relatively long time. Furthermore, upon the bag exchange, during the period of time that the pipe socket lacks a filter bag, the supply air will freely flow in through the pipe socket into the room, and this means that said supply air flow may become considerably increased, which on one hand results in annoying ventilation disturbances in the room in question and in addition causes a substantial drop of the air flows through the other supply air terminal devices of the ventilation system.

Since a ventilation duct network usually contains a great number of bags that should be exchanged, the disturbances for the users of the rooms become significant.

Therefore, an object of the invention is to provide a supply air terminal device, by means of which the problems mentioned entirely or partly can be obviated.

The object is attained by the invention.

The invention is defined in the appended claim 1.

Embodiments of the invention are defined in the appended dependent claims.

In the following, the invention will be described in more detail in connection with the accompanying drawing.

Fig. 1 shows schematically a supply air terminal device according to the invention.

Fig. 2 shows a variant of a supply air terminal device according to the invention.

Fig. 3 shows a detail of a filter bag for the use in a supply air terminal device according to the invention.

Fig. 1 illustrates a pipe socket 1, which constitutes an end part of a supply air pipe 2, which mouths into a room 10. A bag 20 of a flexible filter material is with the neck thereof closely connected around the circumference of the pipe socket 1. Supply air 3 flows in through the pipe socket 1, into the neck 21 of the bag and passes out through the walls of the bag 20. The material of the bag 20 is in a known way *per se* selected in order to afford a pressure drop of the order of 100 Pa to the supply air 3, so that the supply air 3 upstream the bag 20 can have an expedient overpressure of approx. 100 Pa in relation to the atmosphere, so that the supply air 3 can be distributed from a fan assembly via a pipe system, which branches into a plurality of pipes 2, which mouth in the respective rooms.

According to the invention, the neck 21 of the bag 20 has a around 180° outward reversed edge portion 22, which is stabilized by a resiliently elastic ring-shaped edge element 23, which has a circumference that is somewhat greater than the circumference of the bag neck 21. The ring-shaped resiliently elastic edge element 23 has a substantially circular memory shape, and tightens the neck of the bag against this circular shape.

In fig. 1 it can be seen that the pipe socket 1 has an inward around 180° bent over edge portion 11 for the formation of a recess 12, which is of a shape and size that corresponds to 5 for the bent over edge portion 22 of the bag in order to allow the same to be readily inserted therein and stably retained therein.

An operator can grip the bag 20 in the neck portion thereof by the hand and deform the same from the memory shape of the ring-shaped edge portion 23, and thread the neck part of the bag a distance into the socket 1 in the direction opposite to the supply air flow 3. When the bag neck is set free, the edge element 23 tends to raise the bag neck 21 to circular shape at the same time as the supply air flow 3 tends to blow up the bag 20 to a circular shape, so that the bag neck is barely widened, the flange part 22 of the bag being directed toward the recess 12. The bag 20 is axially driven by the supply air flow and/or by the fact that the operator pulls the bag 20 axially outward, so that the edge part 22 of the bag is received in the recess 12. The axial force exerted by the supply air flow 3 on the bag 20 during operation retains the bag 20 steadily in the recess 12. By the fact that the element 23 has a considerable flexural rigidity in the axial direction thereof, a retracting of the bag 20 out of the socket is prevented.

When the bag 20 is to be exchanged, an operator can grip the bag 20 around the circumference thereof and tie up the bag, in order to then insert the bag through the neck part thereof and further into the pipe socket 1 until the edge part 22 leaves the recess 12, after which the neck part of the bag can be deformed manually so that also the bag neck part can be taken out through the opening of the pipe socket 1 defined by the portion 11.

Fig. 1 illustrates that the pipe socket may be integrated in the supply air pipe 2. Fig. 2 shows that the pipe socket 1 may be in the shape of a separate element that is mounted onto the end of the pipe 2. Thus, the pipe socket 1 is shown to have a sleeve in order to be readily mounted on the end of the pipe 2. The second end of

the pipe socket 1 is shown tubular and provided with an inward flanged edge part 11 for the formation of the recess 12, which receives the edge portion 22 of a first inner bag 20. The separate pipe socket 1 is shown to have a retracted waist portion 31 for the receipt of a first end portion of a second pipe socket 1', the second end portion of which has an edge part 11, which is flanged inward for the formation of a pocket 12 for the receipt of an outer edge portion 11' of a second bag 20', in which the bag 20 is shown received. In fig. 2, it can further be seen that the separate pipe socket 1 between the ends thereof may have perforations 14 for the direct transmission of supply air into the pipe socket 1'.

A supply air terminal device of the kind that is seen in fig. 2 should normally have an appurtenant valve element, which normally covers the perforations 14 and which is arranged to temporary uncover the perforations 14 in order to enable an increase of the air throughflow through the supply air terminal device, for instance for temporary enhanced ventilation of the room in question. Thus, the supply air terminal device according to fig. 2 is a two-stage supply air terminal device in respect of the air throughflow.

Fig. 2 illustrates pipe sockets that can be mounted on the end of a supply air pipe 2 in order to enable quick and simple exchange of filter bags having a neck design in correspondence with fig. 3.